CLAIMS:

1. A method of forming a non-volatile resistance variable device, comprising:

forming a first conductive electrode material on a substrate;

forming an amorphous chalcogenide comprising material to a first thickness over the first conductive electrode material, the chalcogenide material comprising A_xB_y, where "B" is selected from the group consisting of S, Se and Te and mixtures thereof, and where "A" comprises at least one element which is selected from Group 13, Group 14, Group 15, or Group 17 of the periodic table;

forming a metal comprising layer to a second thickness over the chalcogenide material; the metal comprising layer defining some metal comprising layer transition thickness for the first thickness of the chalcogenide comprising material such that when said transition thickness is met or exceeded, said metal comprising layer when diffused within said chalcogenide comprising material transforms said chalcogenide comprising material from an amorphous state to a crystalline state; the second thickness being less than but not within 10% of said transition thickness;

irradiating the metal effective to break a chalcogenide bond of the chalcogenide material at an interface of the metal and chalcogenide material and diffuse at least some of the metal into the chalcogenide material, and said chalcogenide comprising material remaining amorphous after the irradiating; and

after the irradiating, depositing a second conductive electrode material over the chalcogenide material, and which is continuous and completely covering at least over the chalcogenide material, and forming the second conductive electrode material into an electrode of the device.

2. The method of claim 1 wherein the irradiating is effective to form the chalcogenide material to have a first region which is displaced from the interface at least by an interface region having a higher content of "A" than the first region.

3. The method of claim 1 wherein "A" comprises Ge.

4. The method of claim 1 wherein "A" comprises Ge, and "B" comprises Se.

5. The method of claim 1 wherein "A" comprises Ge, "B" comprises Se, and the metal comprises Ag.

6. The method of claim 1 comprising forming the non-volatile resistance variable device into a programmable memory cell of memory circuitry.

7. The method of claim 1 wherein the second thickness is below but not within 25% of the transition thickness.

8. The method of claim 1 wherein the second thickness is below but not within 50% of the transition thickness.

9. The method of claim 1 wherein the second thickness is below but not within 65% of the transition thickness.

10. The method of claim 1 wherein the second thickness is below but not within 85% of the transition thickness.

11. The method of claim 1 wherein the first and second conductive electrode materials are different.

12. The method of claim 1 wherein the second electrode material predominately comprises elemental silver.

13. A method of forming a programmable memory cell of memory circuitry, comprising:

forming a first conductive electrode material on a substrate;

forming an amorphous chalcogenide comprising material to a first thickness over the first conductive electrode material, the chalcogenide material comprising A_xB_y, where "B" is selected from the group consisting of S, Se and Te and mixtures thereof, and where "A" is selected from the group consisting of Ge, Si and mixtures thereof;

forming a layer comprising Ag to a second thickness over the chalcogenide material; the layer comprising Ag defining some Ag comprising layer transition thickness for the for the first thickness of the chalcogenide comprising material such that when said transition thickness is met or exceeded, said layer comprising Ag when diffused within said chalcogenide comprising material transforms said chalcogenide comprising material from an amorphous state to a crystalline state; the second thickness being less than but not within 10% of said transition thickness;

irradiating the Ag effective to break a chalcogenide bond of the chalcogenide material at an interface of the Ag and chalcogenide material and diffuse at least some of the Ag into the chalcogenide material, and said chalcogenide comprising material remaining amorphous after the irradiating; and

after the irradiating, depositing a second conductive electrode material over the chalcogenide material, and which is continuous and completely covering at

least over the chalcogenide material, and forming the second conductive electrode material into an electrode of the device.

14. The method of claim 13 wherein the irradiating is effective to form the chalcogenide material to have a first region which is displaced from the interface at least by an interface region having a higher content of "A" than the first region.

15. The method of claim 13 wherein the second electrode material predominately comprises elemental silver.

16. A method of forming a non-volatile resistance variable device, comprising:

forming a first conductive electrode material on a substrate;

forming an amorphous chalcogenide comprising material to a first thickness over the first conductive electrode material, the chalcogenide material comprising A_xB_y, where "B" is selected from the group consisting of S, Se and Te and mixtures thereof, and where "A" comprises at least one element which is selected from Group 13, Group 14, Group 15, or Group 17 of the periodic table;

forming a metal comprising layer to a second thickness less than the first thickness over the chalcogenide comprising material;

irradiating the metal effective to break a chalcogenide bond of the chalcogenide material at an interface of the metal and chalcogenide material and diffuse at least some of the metal into the chalcogenide comprising material, and said chalcogenide comprising material remaining amorphous after the irradiating, the chalcogenide comprising material after the irradiating having a first region which is displaced from the interface at least by an interface region having a higher content of "A" than the first region; and

after the irradiating, forming a second electrode material operatively proximate the chalcogenide material.

17. The method of claim 16 comprising forming the interface region to have a thickness of less than or equal to 100 Angstroms.

18. The method of claim 16 comprising forming the interface region to have a thickness of at least 10 Angstroms.

19. The method of claim 16 comprising forming the interface region to have a thickness of less than or equal to 100 Angstroms, and of at least 10 Angstroms.

20. The method of claim 16 comprising forming the second electrode material to be continuous and completely covering at least over the chalcogenide material.

21. The method of claim 16 comprising forming the interface region to be substantially homogenous.

22. The method of claim 16 comprising forming the interface region to not be substantially homogenous.

23. The method of claim 16 comprising forming the interface and first regions to have substantially the same concentration of the metal.

24. The method of claim 16 wherein the metal comprising layer defines some metal comprising layer transition thickness for the first thickness of the chalcogenide comprising material such that when said transition thickness is met or exceeded, said metal comprising layer when diffused within said chalcogenide comprising material transforms said chalcogenide comprising material from an amorphous state to a crystalline state; the second thickness being less than but not within 10% of said transition thickness.

25. The method of claim 16 wherein the metal comprising layer defines some metal comprising layer transition thickness for the first thickness of the chalcogenide comprising material such that when said transition thickness is met or exceeded, said metal comprising layer when diffused within said chalcogenide comprising material transforms said chalcogenide comprising material from an amorphous state to a crystalline state; the second thickness being less than but not within 50% of said transition thickness.

26. The method of claim 16 wherein the second electrode material predominately comprises elemental silver.

27. A method of forming a programmable memory cell of memory circuitry, comprising:

forming a first conductive electrode material on a substrate;

forming an amorphous chalcogenide comprising material to a first thickness over the first conductive electrode material, the chalcogenide material comprising A_xB_y, where "B" is selected from the group consisting of S, Se and Te and mixtures thereof, and where "A" is selected from the group consisting of Ge, Si and mixtures thereof;

forming a layer comprising Ag to a second thickness less than the first thickness over the chalcogenide comprising material;

irradiating the Ag effective to break a chalcogenide bond of the chalcogenide material at an interface of the Ag and chalcogenide material and diffuse at least some of the Ag into the chalcogenide comprising material, and said chalcogenide comprising material remaining amorphous after the irradiating, the chalcogenide comprising material after the irradiating having a first region which is displaced from the interface at least by an interface region having a higher content of "A" than the first region; and

after the irradiating, forming a second electrode material operatively proximate the chalcogenide material.

28. The method of claim 27 wherein the second electrode material predominately comprises elemental silver.

29. The method of claim 27 wherein the layer comprising Ag defines some Ag comprising layer transition thickness for the first thickness of the chalcogenide comprising material such that when said transition thickness is met or exceeded, said layer comprising Ag when diffused within said chalcogenide comprising material transforms said chalcogenide comprising material from an amorphous state to a crystalline state; the second thickness being less than but not within 10% of said transition thickness.

30. The method of claim 27 wherein the layer comprising Ag defines some Ag comprising layer transition thickness for the first thickness of the chalcogenide comprising material such that when said transition thickness is met or exceeded, said layer comprising Ag when diffused within said chalcogenide comprising material transforms said chalcogenide comprising material from an amorphous state to a crystalline state; the second thickness being less than but not within 50% of said transition thickness.

31. A non-volatile resistance variable device comprising:

a substrate having a first electrode formed thereover;

a resistance variable chalcogenide comprising material having metal ions diffused therein received operatively adjacent the first electrode, the chalcogenide material comprising A_xB_y, where "B" is selected from the group consisting of S, Se and Te and mixtures thereof, and where "A" comprises at least one element which is selected from Group 13, Group 14, Group 15, or Group 17 of the periodic table;

a second electrode received operatively adjacent the resistance variable chalcogenide comprising material; and

the second electrode and resistance variable chalcogenide comprising material operatively connecting at an interface, the chalcogenide comprising material having a first region which is displaced from the interface at least by a chalcogenide material interface region having a higher content of "A" than the first region.

32. The device of claim 31 wherein "A" comprises Ge or Si.

33. The device of claim 31 wherein "A" comprises Ge.

34. The device of claim 31 wherein "A" comprises Ge, and "B" comprises Se.

35. The device of claim 31 wherein "A" comprises Ge, "B" comprises Se, and the metal ions comprise Ag.

36. The device of claim 31 wherein the interface region has a thickness of less than or equal to 100 Angstroms.

37. The device of claim 31 wherein the interface region has a thickness of greater than or equal to 10 Angstroms.

38. The device of claim 31 wherein the interface region has a thickness of less than or equal to 100 Angstroms and greater than or equal to 10 Angstroms.

39. The device of claim 31 wherein the interface region is substantially homogenous.

40. The device of claim 31 wherein the interface and first regions have substantially the same concentration of the metal.

41. The device of claim 31 wherein the interface region is substantially homogenous, and the interface and first regions have substantially the same concentration of the metal.

42. The device of claim 31 wherein the second electrode material predominately comprises elemental silver.